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ABSTRACT

This report describes the construction and use of a conceptual framework and procedures for a program-fair, comparative, classroom-focused assessment of 4 kindergarten reading readiness (KRR) programs in kindergarten classes of 115 school districts. Instructional program information systems were developed to provide the means to aggregate and report information on various instructional attributes (such as pacing, proficiency, placement, patterns of use, and user characteristics) of each KRR program. For each program three "maxi" and "mini" assessment forms were prepared. Each class received a composite measurement instrument which included a "maxi" form covering the outcomes of the program used and a "mini" form covering the major outcomes of one of the 3 other programs. Indications of entering proficiency level of children, program implementation and use, biosocial characteristics of pupils and schools, and subsequent reading proficiency of pupils in all programs were also obtained. Data are reported on several descriptive aspects of implementation and on overall program outcome proficiency attained by users on each outcome of the program they used. Also reported is an analysis of outcome proficiency by program use and instructional emphasis, which is intended to take into account the wide range of within-program variability across classes. Cross-program proficiency data are not given. No claims about the comparative effectiveness of programs are made. (BH)

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Program-Fair Evaluation of Instructional Programs: Initial Results of the Kindergarten Reading Readiness Inquiry



SWRL EDUCATIONAL RESEARCH AND DEVELOPMENT

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PROGRAM-FAIR EVALUATION OF INSTRUCTIONAL PROGRAMS: INITIAL RESULTS OF
THE KINDERGARTEN READING READINESS INQUIRY

Ralph A. Hanson, Richard E. Schutz, and Jerry D. Bailey

ABSTRACT

Obtaining credible comparative information regarding the effects of instructional programs has long been recognized as an important but complex task. Although a number of approaches have and are being used for this purpose, no adequate methodology is yet available. This study provides an empirical exemplar of a new methodology for providing comparative proficiency data on instructional programs. It was carried out to assess the comparative effects of four kindergarten reading readiness programs (KRR). This report provides details about the methods used and presents some preliminary findings.

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PROGRAM-FAIR EVALUATION OF INSTRUCTIONAL PROGRAMS: INITIAL RESULTS OF THE KINDERGARTEN READING READINESS INQUIRY

Ralph A. Hanson, Richard E. Schutz, and Jerry D. Bailey

Obtaining credible comparative information regarding the effects of instructional programs has long been recognized as an important but complex task. Of the number of mechanisms tried, the most common has been the administration of the traditional standardized achievement test after instruction to participants using different programs. While this technique is still widely advocated (e.g., Tallmadge, Horst, & Wood, 1975), there is considerable evidence that this approach is an inadequate means to identify differential instructional effects (e.g., Popham, 1975; Follett, 1976). Approaches based on program-specific assessment procedures, on the other hand, typically have proven too sensitive to one particular program's instruction, (e.g., Brownell, 1966). In essence, no adequate methodology for providing comparative information on the effects of instructional programs is yet available.

SWRL inquiry over a period of several years has sought to provide a new conceptual framework for addressing the central concern of such evaluation: providing credible and comparable measures of instructional proficiency on each program (Wolf, Note 1; Popham, 1969; Majer & Sullivan, Note 2; Shoemaker, 1972). These conceptualizations have recommended that some or all of the steps below be followed in developing a "program-fair assessment."

1. Provide behaviorally-referenced description of the outcomes for each of the programs under consideration and the mapping of each program's outcomes onto those of the others by analytical means.
2. Designate the program-general and program-specific areas of measurement.
3. Provide measures of the general outcomes on all programs and specific outcomes on the programs for which they are relevant.
4. Compare the instructional effects of programs on the program-general outcomes.

This general strategy represents an important departure from previous practices in determining the instructional effects of programs. It recognizes the fundamental integrity of resource-referenced instructional programs and the necessity of reporting instructional effects consistent with this recognition.

The present inquiry sought to enlarge and extend this initial work by examining empirically measurement and other aspects of "program-fair evaluation" and the related issue of program implementation and

use. The overall goal of the inquiry was to provide an empirically verified methodology in the form of a conceptual framework and procedures that can be used to conduct program-fair evaluations.

* * *

The opportunity to carry out the inquiry was created when the U.S. Office of Education initiated a project under Title III of the Elementary and Secondary Education Act that supported the purchase by schools of kindergarten reading readiness (KRR) programs for use during the 1973-74 school year. Acceptance of funds in this project obligated participating districts to provide the U.S. Office of Education evaluation data upon completion of program use.

With the cooperation of the U.S. Office of Education, districts in six states using the four most popular kindergarten reading readiness programs were designated as the inquiry population. Each of these districts was receiving funds for the purchase of one of the following four programs: 1) Alpha Time, published by New Dimensions, 2) Beginning to Read, Write and Listen, published by Lippincott, 3) Distar I Reading, published by SRA, 4) the Kindergarten Program, published by Ginn. Districts choosing to participate in the SWRL inquiry would receive in return achievement measures and related materials, summary reports on the performance of their pupils, classes, schools, and district on the outcomes of the program they were using, and fulfillment of the grant evaluation requirement. SWRL would provide the R&D-related resources and services in connection with conducting the inquiry.

Over the next two years (1973 and 1974) the KRR inquiry was carried out in cooperation with 115 participating districts. SWRL's R&D responsibilities included instrument development; the design and operation of an information system to distribute, receive, process, and report information to various audiences; and analyses of the data base for a series of R&D reports. The present report, the first in the KRR inquiry technical series--describes the procedural aspects of the inquiry and presents initial analysis of the data base.

GENERAL DESIGN CHARACTERISTICS

Several major characteristics of the KRR methodology are important in both understanding the kind of information it can provide and in judging the credibility of that information.

Program Information Systems

A significant aspect of the KRR methodology was the development and use of instructional program information systems as the core vehicle for the inquiry. In simplest terms, program information systems provide the means to aggregate and report information on various instructional attributes (such as pacing, proficiency, placement, patterns of use, and user characteristics) of a resource-referenced instructional program to a wide variety of audiences (pupils, teachers, principals, funding agencies, publishers, the R&D community) throughout program use (Moncrief, 1977). Such systems have long been expected but only recently have actually begun to arrive at schools. SWRL has operated these systems in connection with its instructional development activity with large numbers of participants over the past seven years. Other laboratories and centers (e.g., Pittsburgh, Wisconsin) have also been active in this area, but for various reasons the merits of program information systems for educational practice and for educational R&D have not yet become widely recognized.

One of the systems--the Kindergarten Program-Quality Assurance System (KP-QA), in use annually since 1972 in approximately 400 districts, 2,000 schools, 5,000 classes, and with 200,000 pupils in 18 states and one territory (Hanson & Schutz, 1975; 1976)--provided much of the experience and technological basis for developing independent but coordinate program information systems for each of the four KRR inquiry programs.

Survey Research Approach

An important benefit of the use of a program information system is that it produces a data base which allows a significant increment in the potency of what is traditionally viewed as low-yield "survey" data. The use of survey-type data is not unusual in evaluation inquiry. What is unusual is that when used in conjunction with a program information system, such data can extend rather than limit the possibilities for effective research. The two conditions that positively affect the research possibilities occur when a sufficient number of the user population (which is to be referenced by the results) can be persuaded to participate and when the participants embody in sufficient numbers all segments of the larger user population that contribute to the variability in the program attribute being described. Both of these conditions, typically considered to be impossible to obtain in the usual "evaluation" context, are easily accomplished through use of program information systems (Hanson & Schutz, 1975).

In the KRR inquiry, over 1,000 classes representing about 60% of the eligible districts in the six states, i.e., those using one of the four applicable programs, actually participated. While this was a gratifying response based on a single "general letter" invitation, even more important was the fact that the actual participants completed and returned over 95% of the data collection instruments.

One final point regarding the survey approach taken in KRR and the use of program information systems in general relates to their cost. The fact is that in the exercise of such systems the cost per unit decreases dramatically with increases in the number of participating units. At the same time the service rendered to users and the value of resulting data bases for research purposes both increase substantially. Thus, the marginal incremental costs for large numbers of participants are more than compensated for in the additional benefits accrued.

Multiple Units of Analysis

A direct benefit of using program information systems is the opportunity to examine the full set of meaningful units of analysis in schools. These include pupils, classes, schools, and programs. The ability to use the classroom as the principal unit of all analyses, for example, is a provision that has often been spoken about in educational research literature, e.g., Wiley and Bock (1967), as the ideal from both operational and data analytic perspectives when one is interested in assessing program effects. Only recently, however, has it been realized in research practice. The results show promise of greatly increasing our understanding of the effects of schooling (Hanson & Schutz, 1975, 1976; Rakow, Airasian, & Madaus, Note 3). The large number of natural participants that accompany the use of a program information system and the nature of such systems make this aspiration realizable in general and for KRR in particular.

Program-Fair Assessment Design

A critical feature of a program-fair evaluation and the one on which attention was most heavily focused in earlier program-fair assessment work is the instrument or instruments used to measure end-of-program attainment. In KRR, this aspect represented the leading edge of the development effort involved in the inquiry.

In actually designing these assessments, a modified matrix sampling approach in which the classroom was the unit of differentiation was utilized. For each program three "maxi" and "mini" assessment forms were prepared (Figure 1). Each class received a composite measure which included a "maxi" form covering the outcomes of the program used and a "mini" form covering the major outcomes of one of the three other programs. A considerable effort was required to prepare the various end-of-year assessment forms used (30 in all) and making sure they were distributed in a balanced fashion across all users. However,

this configuration yielded proficiency measures for all users of a program on their own outcomes as well as the outcomes of the other three programs.

MAXI FORMS

		Alpha Time (A) 53 items			Beginning (B) 71 items			Kindergarten (C) 57 items			Distar (D) 54 items	
		1	2	3	1	2	3	1	2	3	1	Total
M I N I	1				①					⑥	⑦	3
	Alpha Time (21 items)	2				②		④				2
	3						③		⑤			2
F O R M S	1		⑨					⑪				2
	Beginning (32 items)	2	⑧						⑫			2
	3			⑩						⑬	⑭	3
Kindergarten (20 items)	1	⑮					⑲					2
	2			⑰	⑱						⑳	3
	3		⑯			⑳						2
Distar (25 items)	1			⑳		㉕			㉘			3
	2		㉓				㉗			㉚		3
	3	㉒			㉖			㉙				3
TOTAL		3	3	3	3	3	3	3	3	3	3	30

Figure 1. KRR assessment design.

Use of Other Information Gathering Components

In addition to the program-fair assessment data, considerable other information, both program-specific and program-general, was obtained. These data are useful in their own right for program descriptive/comparative purposes, for interpreting the outcome proficiency information, and for addressing related aspects of a program-fair assessment methodology.

That is, the provision for this information is consistent with the broad conceptual and operational scope for program-fair evaluation sought by the KRR inquiry.

Included in these instruments were indicators of:

1. Entering proficiency level of each class based on pupil assessment (Entry Survey).
2. Program implementation and use based on information provided by each teacher (Instructional Information Sheet).
3. Biosocial characteristics of pupils and schools using each program (School Information Sheet).
4. Subsequent reading proficiency of pupils in all programs based on ratings by the pupil's first-grade teacher (Follow-up Information Sheet).

Providing Comparable Program Performance Information

The principal intention of program-fair evaluation methodology is comparative information on program performance. The potential for providing this information in KRR is inherent in the nature of the data provided by the full set of inquiry instrumentation. A major attribute of these instruments is their capability to provide proficiency estimates on each program's outcomes both by users of that program and users of other programs. Use of the KRR maxi and mini forms along with the other design characteristics allows such estimates to be obtained by several different methods. Interpretations can be derived for each set of program objectives by considering: (1) users of the program vs. non-users of the program and (2) users of one program vs. users of another specific program. Further, these estimates can be derived directly by several methods. The most obvious is the simple summing of outcome scores for pupils/classes/schools/districts across the same maxi or mini forms. Another means would be through multiple matrix sampling using the class as the unit. Using this method, the multiple forms for a program would be treated as parallel thereby allowing scores to be derived on the same outcomes across forms.

In each case, the performance estimates would be reported for a number of subgroups of the KRR sample. These sets of subgroups can be from within or across programs and can be constructed based on data from the full set of KRR components. For example, proficiency estimates (on one or more program's outcomes) can be provided for user groups (within one program or across programs) based on the (1) biosocial categories defined by the School Information Sheet, (2) information on the extent of program use and implementation derived from the Instructional Information Sheet, and (3) the actual proficiency of pupils upon program entry based on Entry Survey data.

Such analyses presented separately for each set of categorizations should provide important insights into program effects. Taken in combination these data should allow the examination of the relative influence of such factors, i.e., the biosocial characteristics of pupils, degree of program implementation and use, and the entering proficiency of pupils, etc., to be sorted out.

This is a large and rich data base. The substantive findings included in the present report are limited to descriptive statistics focusing on the outcomes attained by each program on its own outcomes. Subsequent reports will address the intersect of these outcomes with the biosocial characteristics and extra-program domains.

DEVELOPMENT OF INSTRUMENTS

The development of the data gathering components that fulfilled KRR information requirements is described in this section. Implementation is described in the next section.

Entry Survey

Pre-instruction information on all classes that would be comparable both within and across programs was provided by the Entry Survey, an instrument composed of 22 individually administered items. This instrument was developed specifically to assess kindergarten pupil reading readiness proficiencies prior to instruction in another study, the KP-QA inquiry. The data from that study provided strong empirical evidence for the Entry Survey psychometric soundness. A complete discussion of the rationale and development of the Entry Survey can be found in Coker and Legum (Note 4; Note 5).

End-of-Year Assessment

The prime KRR information source for comparative purposes was the end-of-year assessment. The development of these assessments began with an analysis of each program's instructional materials to derive its outcomes. Domains for the outcomes were defined and stratified according to the position of each domain element in the instructional sequence. An item form was then designated for each outcome based upon the outcomes' definition, domain, and the procedure used to instruct pupils on the outcome. (A brief description of the outcomes of each program is given in the Appendices.)

At this point an attempt was made to place objectives into two sets, corresponding to the "common" and "unique" categories suggested in prior program-fair assessment conceptualizations. After a concerted effort this proved to be an impossible task for several reasons. Most critical was the clear lack of agreement across individuals in the item formats for outcomes across programs. This did not mean that agreement was perfect or easily obtained on the outcome description and domain element aspects. These aspects, however, did not display the irreconcilable differences found in the item formats.

One may ask whether differences in item formats are really a significant factor in estimating outcome performance. This was essentially the object of an earlier SWRL study (Hanson & McMorris, Note 6; Note 7). In that study, pupils in 20 classes using the same program were administered assessments on two reading outcomes, using three different item formats. Very substantial differences in performance were found across item formats covering the same domain(s).

This was due to the fact that one of the most important characteristics of domain-referenced, outcome-specific assessments is the absolute level of performance proficiency attained. Other researchers, e.g., Traub and Fisher (Note 8), have reached similar conclusions about the important effects of item formats in measuring achievement, especially in the area of reading. Since formats are directly related to the proficiency level attained, the designers of outcome-specific assessments must be most careful in their specifications.

Because of this complexity, a modified matrix sampling approach was adopted for the design of the program-fair assessments for KRR. Instead of designating outcomes as "unique" and "common" across programs, the program assessments and study design were prepared instead to provide adequate measures of each program's outcomes independent of one another. We began with the development of the "maxi" forms.

The maxi forms included items on all the outcomes of a single program with the number of items being determined by the scope of the domain. The items included group-administered and individually-administered items, with both selected and constructed response formats. Also, for some outcomes, teacher questionnaire items that required the rating of pupil behavior exhibited during instruction were employed. The intent was to obtain the most direct and efficient indicator of each domain as defined by the instructional program. The domain breadth of each program required multiple maxi assessment forms, for each program to avoid fatigue for the kindergarten pupils, while providing for adequate program coverage.

The information to be gathered from the maxi forms constitutes the core of the KRR data base. Reports of proficiency on a program's stated outcomes would be derived from this data. While this is an important aspect of the KRR information requirement, the essence of the program-fair assessment aspiration is provision for a comparative interpretation across the programs. The logic of the KRR inquiry accomplished this by having pupils in each program assessed not only on their program's outcomes but on those of the others to be compared as well. This requirement was met by designing "mini" forms. The items generated for use in the maxi forms created an item pool from which it was possible to create these smaller program-outcome-specific assessment forms. Using outcome-specific item pools, items were sampled and assembled into the mini forms. Three such mini forms were constructed for each program. As a set, the entire ensemble of outcomes for a program was to be represented in the three mini forms, although not all objectives would appear on all mini forms. The number of items per objective and the number of forms on which an objective was represented were

determined by the scope of the given domain and its instructional emphasis in the program.

A complete assessment form for operational use was obtained by linking a maxi form for one program to a mini form of another program. Thirty such forms were prepared in all and distributed systematically to classes. A layout of the assessment configurations is given in Figure 1.

Instructional Information Sheet

The second-most-important source of information for program-fair evaluation in general and for KRR in particular relates to the implementation of each program in the classroom. The prior experience with KP-QA had clearly indicated that a wide range of emphasis is typically given to the same program across users. To take this matter into account in the inquiry, an Instructional Information Sheet for each program was designed for completion by participating classroom teachers. The aspects of program use addressed were pacing or rate of program completion, amount of the program used, the emphasis given to program instruction, use of auxiliary programs, and the emphasis given to 17 general instructional outcome domains typically addressed in kindergarten, which also subsumed all of the stated outcomes from all four programs.

School Information Sheet

Another information requirement identified for KRR was indicators for the biosocial characteristics of the pupils participating in each school. While the major instructionally-relevant differences among pupils would be indicated by the Entry Survey data, the biosocial data were considered important because of the possible interaction effect of a program with such pupil characteristics. The specific characteristics addressed included: average family income, ethnic group membership, school location, prior school reading performance on standardized tests, and eligibility for ESEA Title I funds. A School Information Sheet was used to obtain these data.

Follow-up Information Sheet

The inherent intention of kindergarten reading readiness programs is to either provide or prepare pupils for instruction in reading. One indicator of a program's success in this regard is provided by pupil performance on the end-of-year assessment. A second independent aspect of such information is the performance of the pupil in reading within first grade.

To obtain indicators of this information, a Follow-up Information Sheet was prepared and distributed to each KRR-participating school near the close of the 1974-75 academic year. This sheet listed the name of each KRR pupil and provided a place for the first grade reading teacher to indicate the instructional status of this pupil in reading. This information was returned to SWRL and used to generate an average estimate for each KRR class.

Summary of Instrumentation

The design considerations for KRR led to the development of five data collection devices:

1. Entry Survey--a set of 22 items individually administered to all pupils at or near the beginning of the school year and prior to the initiation of instruction. Two parallel forms of this survey were prepared and used.
2. End-of-Year Assessment--an eight page booklet of between 74 and 96 items. Including selected response, individually administered, and questionnaire items from the instructional program and one other comparison program administered to each pupil in a class at the end of the school year (a maxi plus a mini). Thirty different assessment forms were developed and each participating class received one form.
3. Instructional Information Sheet--one page record of instructional implementation variables, such as pacing, materials use, auxiliary materials, and instructional emphasis on relevant content domains for each classroom.
4. School Information Sheet--one page record of the major demographic characteristics pertinent to reading achievement for each school.
5. Follow-up Information Sheet--a set of six item ratings made by a pupil's first grade teacher on aspects of the pupil's reading proficiency status upon entering first grade.

IMPLEMENTATION

Communication was established with chief state school officers and relevant federal officers in advance of the inquiry, and executive information was provided to these officials periodically during the inquiry.

The Local Education Agency (LEA)--usually the district--was identified as the major center for the receipt, distribution and return of KRR components. Initial communications with each district from SWRL asked for the name and mailing address of a KRR district coordinator. From that point forward, all communications were directed through that person. The KRR coordinator, designated by the LEA, was responsible for all operations within that district as well as any other communications between SWRL and school personnel.

Another important aspect of KRR communication involved the program publishers. The publishers of the four programs were kept fully informed of the inquiry as a matter of professional courtesy and to ensure that KRR did not in any way duplicate or compete with their professional and proprietary endeavors. Each publisher provided formal feedback on the statement of domains and objectives prepared for its program for purposes of the inquiry. This feedback was used to modify those statements to obtain mutually acceptable specifications. The items per se were also reviewed by each publisher. The handful of items to which a publisher took some objection were eliminated in further analyses affected by the reaction. The cooperation of the publishing and the superordinate education communities in the inquiry contributed appreciably to its success without in any way imposing additional burdens or complications for the participating LEAs.

Installation Materials

To assist the LEA coordinator in completing liaison tasks, and the teacher in using the KRR components, two guides, the Coordinator Guide and the Teacher Guide, were designed and developed. The Coordinator Guide provided descriptive information about KRR, outlined specific duties, and provided a schedule of events. Included with the four page guide was a KRR Roster/Checklist. This Roster provided a computer generated list of participating classes in the LEA along with columns corresponding to the various KRR components. The coordinator assigned a number to each class, distributed the corresponding pre-numbered components to that class and marked an "x" in the appropriate column next to the class when a component was returned. This mechanism served both as a means of maintaining teacher and pupil anonymity outside the district as well as a management aid to the coordinator in determining KRR component completion of each class.

The Teacher Guide defined the purpose of KRR, described the classroom procedures involved, and provided a schedule of events. This guide was distributed to the teachers with a pre-attached identification label. The same label was used on all components for a class. A complete description of these distribution mechanics is found in the discussion of distribution of materials within a district.

Timeline of Events

The basic timeline of KRR operations (outlined in Figure 2) spans the period from March 1973 to May 1975. The following procedures were followed:

1. All contacts with a district were made through the designated KRR coordinator; the classroom components were delivered and received through that person.
2. The coordinator and district were responsible for the distribution of all KRR materials within a district. SWRL forwarded all materials to a central place in the district and provided the means for forwarding the materials back to SWRL from this point. Postage-paid envelopes were provided for this purpose. To assist in the distribution and return of components, they were packaged in classroom sets within separate envelopes. Affixed to the outside of each envelope and to all components being returned to SWRL within it were gummed identification labels, computer-printed with the following information: state name and number, district name and number, school number, and identification number.
3. A computer-generated Roster/Checklist was prepared for each district. This was used by the coordinator to designate a class number for each teacher. To do this, the teacher's name was recorded by the coordinator next to a number on the Roster/Checklist and that specific class number was communicated to each given teacher. In this way, material distribution and return to classes could be monitored by the coordinator without teacher names being used outside the district.
4. Coordinators were responsible for providing materials in sufficient numbers for each classroom. While the classroom sets were packaged with a standard quantity, additional materials were provided to the coordinator for exceptional cases.
5. Coordinators received a sample set of all KRR classroom materials for their information and thus, had the necessary background information to respond accurately to questions from teachers.

Figure 2. Timeline of KRR events.

<u>Date</u>	<u>Operation</u>
June, 1973	USOE authorizes SWRL to conduct the inquiry and provides a list of possible school district participants.
July, 1973	Each superintendent is sent a prospectus about KRR and asked whether the district would be interested in participation.
August, 1973	Each participating district submits the name of the designated KRR coordinators and the names of the participating schools and number of classes within each.
September, 1973	KRR coordinator receives all information necessary to conduct KRR and the first set of classroom materials (Entry Survey materials) to be distributed to teachers.
September-October, 1973	KRR coordinator receives completed Entry Survey materials from classroom teachers, keeps a record of their receipt and forwards them to SWRL for data processing.
March 1, 1974	KRR coordinator receives the School Information and the mid-year Status Report indicating the materials returned and processed at SWRL from the district.
April 15, 1974	KRR coordinator receives and distributes the second classroom materials set (Instructional Information Sheet and assessments).
May 15-June 15, 1974	KRR coordinator returns completed materials from classroom teachers to SWRL.
September-October, 1974	KRR coordinator receives class, school, and district performance summary reports along with interpretation guides.
March 30, 1975	KRR coordinator receives Follow-up Information Sheets for each school.
April 15-June 15, 1975	KRR coordinators receives Follow-up Information Sheets to SWRL.

6. To assist the coordinator in determining the status of return of components from the classrooms, the computer printed Roster/Checklist was generated at several times during the school year (1973-74). It included a current record of the components received and processed by SWRL to that date.

Processing KRR Components

The source data processing of returned KRR components involved the coordination of three activities: clerical checking and coding; keypunching to enter data into the computer; and computer error checking, correction and storage. After this process, the data were available in machine-manipulable form for both user report generation and analyses for R&D reports. The specifics involved in these three activities are described elsewhere (Bailey & Hanson, Note 9).

KRR User Report System

The KRR Report System produced two different kinds of reports. The first of these was a Roster/Checklist Status Report (Figure 3) mailed to the KRR coordinator in each district during March. The following information was provided for each participating class: school name, class number, program use, and Entry Survey return. Program use was indicated by an "x" placed in the column under the program name. The return and processing of the Entry Survey was indicated by reporting the number of pupils in the class for whom scores had been received. This information allowed the coordinator to determine which classes had returned the Entry Survey, the number of participating pupils, and to confirm that program use information had been provided. Thus, the Status Report supported the KRR data collection system.

A second kind of KRR report was the final user report (see Figure 4), which summarizes performance and pacing data from the various KRR components. A separate user report was generated for each class, school, and district. At the school and district level, results were presented for their instructional program with separate sections of the report devoted to each class and school. KRR Report Interpretation Guides were prepared and distributed with these reports.

The distribution of KRR user reports and accompanying guides for the entire district was a designated responsibility of the coordinator. A copy of the full set of final district user reports, however, was bound together and delivered to the Office of Education, to fulfill the districts' grant reporting requirements to OE.

KRR STATUS REPORT

STATE ANY STATE
DISTRICT LEA

MAR 18, 1974

```

*****
* IDENTIFICATION * PROGRAM * COMPONENT *
*****
* CLASS * ALPHA * BEGIN * DISTAR * ENTRY * POST *
* SCHOOL * NUMBER * TEACHER NAME * TIME * TO READ * SURVEY * TEST *
*****
* 001 BRUSH COLLEGE * 001 * * * * * 19 * *
* 001 BRUSH COLLEGE * 002 * * * * * 14 * *
* 002 CENTENNIAL * 003 * * * * * 26 * *
* 002 CENTENNIAL * 004 * * * * * 21 * *
* 003 DENNIS * 005 * * * * * 26 * *
* 002 DENNIS * 006 * * * * * 26 * *
* 003 DENNIS * 007 * * * * * 23 * *
* 004 DURFEE * 008 * * * * * 24 * *
* 004 DURFEE * 009 * * * * * 23 * *
* 005 ELDORADO * 010 * * * * * 22 * *
* 005 ELDORADO * 011 * * * * * 17 * *
* 006 ENTERPRISE * 012 * * * * * 30 * *
* 006 ENTERPRISE * 013 * * * * * 29 * *
* 006 ENTERPRISE * 014 * * * * * 24 * *
* 007 BEN FRANKLIN * 015 * * * * * 31 * *
* 007 BEN FRANKLIN * 016 * * * * * 32 * *
* 008 FRENCH * 017 * * * * * 32 * *
* 008 FRENCH * 018 * * * * * 27 * *
* 009 GARFIELD * 019 * * * * * 15 * *
* 009 GARFIELD * 020 * * * * * 19 * *

```

Figure 3. KRR Status Report.

STATE	ANY STATE		KINDERGARTEN READING READINESS 1973-74																								
DISTRICT	LEA		CLASS REPORT																								
SCHOOL	BRIGHAM																										
CLASS	002																										
PROGRAM	ALPHA TIME		STARTED OCT. 1						ENDED MAY 21						119 OF 124 LESSONS COMPLETED												
			ENTRY SURVEY (32 PUPILS)																								
SCORE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	MEAN			
NUMBER	0	0	0	0	0	1	1	2	2	2	2	1	4	3	3	3	5	1	0	0	1	1	0	12.56			
OF PUPILS	0	0	0	0	0	1	1	2	2	2	2	1	4	3	3	3	5	1	0	0	1	1	0	12.56			
			END OF YEAR ASSESSMENT (30 PUPILS)																								
			AVERAGE (%)																								
			ITEMS	PROFICIENCY	MEAN	SCORE FREQUENCY																					
						0	1	2	3	4	5	6	7	8													
1 OVERALL SKILLS			1	97	.97	1	29																				
2 WORD ANALYSIS--VOCABULARY			5	90	4.50	0	0	1	2	8	19																
3 WORD ANALYSIS--LANGUAGE			8	67	5.33	0	1	1	4	3	2	12	5	2													
4 SIMPLE RECALL SKILLS			2	92	1.83	0	5	25																			
5 SEQUENCE			2	57	1.13	7	12	11																			
6 MAIN IDEA			1	87	.87	4	26																				
7 PREDICTION AND INFERENCE			3	73	2.20	3	4	7	16																		
8 READING AND LITERATURE			3	63	1.90	0	4	25	1																		
9 INTERPRETIVE SKILLS			1	83	.83	5	25																				
10 FOLLOWING DIRECTIONS			1	67	.67	10	20																				
11 DRAMATIC PLAY			2	93	1.87	0	4	26																			
12 VISUAL MEMORY			3	86	2.57	0	1	11	18																		
13 AUDITORY MEMORY			4	81	3.23	0	1	3	14	12																	
14 PSYCHOMOTOR SKILLS			6	97	5.83	0	1	0	0	2	10	3															
15 NEED TO BELONG			2	85	1.70	3	3	24																			
16 NEED TO ACHIEVE			2	50	1.00	0	30	0																			
17 NEED FOR LOVE AND AFFECTION			1	90	.90	3	27																				
18 NEED TO BE FREE FROM GUILT			1	100	1.00	0	30																				
19 NEED FOR SELF RESPECT			1	87	.87	4	26																				
20 NEED TO BE FREE FROM FEAR			1	87	.87	4	26																				
21 NEED FOR UNDERSTANDING			1	93	.93	2	28																				
TOTAL			51	80	41.00	STANDARD DEVIATION 7.25 MINIMUM SCORE 19 MAXIMUM SCORE 49																					

PROGRAM IMPLEMENTATION INFORMATION

The complete KRR data base provides a wealth of information on various aspects of the implementation of instructional programs by schools. In this report only the data on several descriptive aspects of implementation are presented. Specifically, information on the level of participation, characteristics of participants, Entry Survey proficiency, and extent of program use will be presented.

Level of Participation

There are two distinct aspects to participation in KRR. The first relates to the original response by districts to the invitation asking them to take part in KRR. The second is the actual participation by those agreeing to take part based on their return of the various KRR components. A summary of data on the first matter is presented in Table 1.

Table 1

Number of KRR Participants

Program		States	Districts	Schools	Classes
Alpha Time	Invited	7	89	—	—
	Agreed	6	41	156	287
Beginning	Invited	7	81	—	—
	Agreed	7	46	141	335
Kindergarten	Invited ^a	—	—	—	—
	Agreed	7	20	129	297
Distar I	Invited	4	16	—	—
	Agreed	2	8	37	60
Total	Agreed	7	115	463	979

^aNot applicable since participants were those taking part in Kindergarten Program Title III Quality Assurance exercise.

For each program (except the Kindergarten Program*) the top line gives the number of districts invited to take part in KRR; the second line shows the number that actually agreed to participate. Results show that slightly more than one-half of the eligible districts agreed to take part in KRR. The actual percentages of acceptance are 46, 57 and 50, with an overall average district acceptance rate of 51%. Considering that the invitation to participate was a one-time mailing during the summer without follow-up, this is viewed as a respectable response rate. No formal effort was devoted to examine the determinants of non-response or to compare non-respondents with respondents since there was ample opportunity to check on replicability and variability internal to the inquiry.

The second type of information on participation (Table 2) shows the number and percentage of the participating districts, schools, classes, and pupils returning each KRR component. Virtually all of the classes, schools, and districts that agreed to participate in KRR stayed and returned all KRR components, including the relatively complex and time consuming end-of-year assessment.

The small size of the Distar sample was due to an initial pool of Distar users considerably smaller in number than for the other three programs. Because of this small number, some data analyses involving the performance of Distar users on other program objectives are therefore less meaningful. Other types of data analyses pertinent to Distar, such as those involving the performance of other program users on Distar outcomes, were unaffected. The implication of sample size differences is considered separately in each situation.

Descriptive Characteristics of Participants

The School Information Sheet provides data that describes participating classes in terms of various biosocial characteristics. The data indicates that the proportion of classes within specific categories of each descriptive characteristic varies slightly across the three well-represented programs (Alpha Time, Beginning, and Kindergarten). All indications are that these represent reasonable variations in the respective user groups rather than differential participation in KRR by groups either within or across programs.

*Kindergarten Program participants were those districts within the designated states that had previously agreed to take part in the 1973-74 KP-QA.

Table 2
Number of Participants Returning Each Component

Program	Component	States	Districts	Schools	Classes	Pupils
Alpha Time	Entry Survey	6	41	160	308	7603
	Instructional					
	Information Sheet	6	41	137	244	---
	School Information					
	Sheet	6	39	149	---	---
	End-of-Year	6	42	162	314	7309
	Follow-up	6	35	138	267	4300
Beginning	Entry Survey	7	42	121	266	6809
	Instructional					
	Information Sheet	7	43	116	235	---
	School Information					
	Sheet	7	41	121	---	---
	End-of-Year	7	44	125	273	6697
	Follow-up	7	34	94	192	3659
Kindergarten	Entry Survey	7	19	116	284	7358
	Instructional					
	Information Sheet	7	19	105	248	---
	School Information					
	Sheet	7	18	113	---	---
	End-of-year	7	19	117	287	6141
	Follow-up	6	8	41	103	1672
Distar	Entry Survey	1	5	19	23	654
	Instructional					
	Information Sheet	1	3	14	16	---
	School Information					
	Sheet	1	5	19	---	---
	End-of-year	1	5	19	25	647
	Follow-up	1	3	16	21	400
Total	Entry Survey	7	107	416	881	22424
	Instructional					
	Information Sheet	7	106	372	743	---
	School Information					
	Sheet	7	103	402	---	---
	End-of-year	7	110	423	899	20794
	Follow-up	7	80	289	583	10031

Table 3

Biosocial Characteristics of Classes by Program

Biosocial Characteristic	Alpha Time (189-308)	Beginning (188-266)	Kindergarten (203-284)	Distar (23-25)
Title I Eligibility				
Yes	206	185	141	25
No	73	69	136	0
Total	279	254	277	25
Ethnicity				
Black	18	34	3	18
Spanish-Surnamed	28	16	15	1
Other	143	138	185	4
Total	189	188	203	23
Average Family Income				
<\$5,000	39	37	23	12
5-9,000	112	104	106	11
9-13,000	87	74	121	0
13-16,000	32	31	15	0
>16,000	14	13	7	0
Total	284	259	272	23
National Reading Norms				
Above	91	93	44	4
At	95	76	85	3
Below	71	76	127	17
Total	297	245	256	24
Location				
Inner City	36	32	35	12
Urban	12	17	49	0
Suburban	37	27	47	1
Small City	133	126	17	10
Rural	67	62	15	2
Total	285	264	263	25

This statement is best supported by the fact that the three programs have entries in the categories of each characteristic. This statement of course does not hold for the 25 Distar classes. As the data in Table 3 indicate, the Distar classes were represented only by schools with relatively low family income, heavy ethnic minority representation, and below-average performance on standardized reading tests.

An interesting matter relative to program selection/adoption addressed by the data for the three fully represented programs is the relationship between the program adopted and the characteristics of classes. With the exception of Distar, these data show no systematic difference in the characteristics of the participating classes which selected each program.

Entry Survey Proficiency

Another way of describing KRR participants is in terms of their performance on the Entry Survey given prior to instruction. The data on this characteristic are given in Table 4. Frequency distributions of the class means on the Entry Survey by program and a summary into quartiles are presented.

Table 4

Distribution of Average Class Entry Survey Proficiency
Across Total Score Quartiles by Program

Score Quartiles	Alpha Time		Beginning		Kindergarten		Distar		Total	
	N	%	N	%	N	%	N	%	N	%
0-54	48	(15.6)	78	(29.3)	64	(22.5)	20	(87.0)	210	(23.8)
55-60	82	(26.6)	71	(26.7)	89	(31.3)	2	(8.7)	244	(27.7)
61-65	92	(29.9)	61	(22.9)	65	(22.9)	0	(0.0)	218	(24.7)
66-100	86	(27.9)	56	(21.1)	66	(23.2)	1	(4.3)	209	(23.7)
Total	308		266		284		23		881	

These data indicate, first, that the anticipated normal distribution of the scores by pupils and classes prior to instruction is present in all cases. Further, the average score and distribution of proficiency scores across the user groups for all programs except Distar appear to be quite close, supporting the prospect of credible comparisons on this basis. All programs except Distar were used with a full range of classes in terms of their entering status.

These data confirm in a more objective fashion the lack of a systematic selection/adoption pattern based on pupil proficiency of the three most widely used programs. There is clearly no relationship here between the program selected and the entering proficiency of pupils.

Program Use

Program use refers to the amount of the available program instructional materials provided by a program that is actually utilized by the teacher. This information was gathered on the KRR Instructional Information Sheet provided to each teacher. The aggregated information over all user classes of a program provides a gross indicator of implementation. Further, it provides a base indicator for establishing the relationship of instruction delivered to outcome proficiency attained to be discussed later.

The data on program use for all KRR classes and all programs given in Table 5 show considerable variability both within and across programs. Not considering the Distar sample, they show that between one-third and two-thirds of the classes completed a program, with the overall percentage finishing 46%. At the opposite extreme, a small number of classes using each program completed less than one quarter of the instruction; the percentage of classes ranged from 6% to 10% over programs with the overall average 9%.

Table 5
Summary of Program Completion by Classes
in Quartile Categories

		Program Completion Quartiles				Total
		1 ($<25\%$)	2 (26-50%)	3 (51-75%)	4 (76-100%)	
Alpha Time	Lessons in Quartile	1-31	32-62	63-93	94-124	
	Classes	15	17	49	161	242
	Percent	6	7	20	67	
Beginning	Lessons in Quartile	1-6	7-12	13-18	19-24	
	Classes	22	63	58	70	212
	Percent	10	29	27	33	
Kinder- garten	Units in Quartile	1-3	4-6	7-9	9-10	
	Classes	21	62	54	85	222
	Percent	9	28	24	38	
Distar	Lessons in Quartile	1-41	42-81	82-120	121-159	
	Classes	3	4	4	2	13
	Percent	23	31	31	15	
Total	Classes	61	145	165	318	689
	Percent	9	21	24	46	

OVERALL PROGRAM OUTCOME PROFICIENCY

The first set of analyses of the KRR end-of-year assessment focused on the level of proficiency attained by users on each outcome of the program they were using (Tables 6-9). The tables show for each program, the outcome name, mean proficiency score for each outcome, number of classes reporting assessment information, and the interquartile range (marking the 25th and 75th percentile points). The horizontal bar on the scale graphically depicts the interquartile range; the pointer locates the mean class proficiency.

To further reduce this data, Tables 6-9 include summary categories corresponding to 80% or higher, 70-79%, 60-69%, 50-59% and less than 50%. The distribution of each program's outcomes across these categories is shown.

Alpha Time

The average proficiency level of classes on each of the Alpha Time outcomes and a summary is given in Table 6. These data show that for seven of the Alpha Time outcomes, the average proficiency falls within the highest summary category, i.e., $\geq 80\%$. At the other end of the categories, three outcomes were found for which the average proficiency level fell below 60%. These are the Sequence, Main Idea, and Auditory Memory outcomes.

Beginning to Read, Write and Listen

The average proficiency levels for Beginning to Read, Write and Listen outcomes varied considerably and are reflected in the data on the individual outcomes as well as in the overall summary (Table 7). The average outcome proficiency ranged from a low of 22.2% (Sentence Reading) to a high of 95.9% (Colors). In terms of the summary categories, the data show an approximation to a bimodal distribution. There are substantial numbers of outcomes in the highest ($\geq 80\%$) and lowest ($\geq 50\%$) categories, with few in between.

Kindergarten Program

The outcome proficiency data for the Kindergarten Program are given in Table 8. For most outcomes, the average proficiency is within the higher summary categories, with the summary data accordingly reflecting a negatively skewed distribution.

Table 6

Description of Outcome Proficiency for Alpha Time
Classes on Alpha Time Outcomes

Outcome	Mean	N	Q1	Q3
1 Overall Skills	74.9	312	64	92
2 Vocabulary	92.6	312	91	97
3 Language	76.7	311	70	83
4 Recall	84.3	312	76	93
5 Sequence	59.7	312	50	69
6 Main Idea	38.9	310	28	48
7 Prediction/Inference	73.6	311	65	83
8 Reading/Literature	70.5	279	60	82
9 Interpretation	91.5	311	89	100
10 Following Directions	85.9	279	79	96
11 Dramatic Play	72.9	279	66	83
12 Visual Memory	89.4	312	84	98
13 Auditory Memory	55.1	312	45	66
14 Psychomotor Skills	75.0	312	70	82
15 Need to Belong	78.1	279	69	89
16 Need to Achieve	72.6	279	64	85
17 Need for Love/Affection	85.4	279	79	100
18 Need to be Free from Guilt	80.1	279	70	94
19 Need for Self-Respect	68.1	279	57	81
20 Need to be Free from Fear	70.4	279	58	86
21 Need for Understanding	73.0	279	62	86

Summary Categories	Number of Outcomes	Percent of Outcomes
80% or greater	7	32
70-79 percent	10	48
60-69 percent	1	5
50-59 percent	2	10
less than 50 percent	1	5

Table 7

Description of Outcome Proficiency for
Beginning Classes on Beginning Outcomes

Outcome		Mean	N	Q1	Q3
1	Colors	95.9	268	94	100
2	Shapes	90.7	268	86	97
3	Amounts	93.6	268	90	98
4	Positions	95.9	268	94	99
5	Visual Discrimination	72.8	268	61	92
6	Letter Identification	86.2	268	80	94
7	Letter-Sound Correspondence	72.2	268	63	85
8	Synonyms	42.8	268	26	58
9	Blending	52.2	268	39	64
10	Word Recognition	55.7	268	43	68
11	Vocabulary	38.9	268	27	49
12	Inference	35.4	268	23	44
13	Parts of Speech	25.4	268	18	29
14	Rhyming	39.6	268	23	48
15	Vowels	25.1	268	8	36
16	Writing	58.1	268	43	68
17	Punctuation	33.1	268	10	48
18	Syllables	29.2	268	11	42
19	Spelling	27.9	268	10	42
20	Picture Interpretation	44.0	268	29	58
21	Classification	84.6	268	73	96
22	Story Interpretation	70.4	268	57	83
23	Sequence	67.1	268	54	80
24	Comprehension	74.9	268	64	88
25	Word Attack	24.5	256	5	39
26	Sentence Reading	22.2	256	3	35
27	Psychomotor	92.5	241	92	100
28	Music Awareness	93.3	245	90	100
29	Oral Language Experience	85.9	245	80	97
Summary Categories		Number of Outcomes	Percent of Outcomes		
80% or greater		9	32		
70-79 percent		4	13		
60-69 percent		1	3		
50-59 percent		3	10		
less than 50 percent		12	42		

Table 8

Description of Outcome Proficiency for Kindergarten
Classes on Kindergarten Outcomes

Outcome		Mean	N	Q1	Q3
1	Colors	96.7	285	95	100
2	Sizes	89.6	285	85	95
3	Amounts	88.8	285	83	95
4	Shapes	93.4	285	91	98
5	Positions	93.7	285	90	100
6	Pre-Match	73.9	285	67	76
7	Pre-Reading	91.4	285	88	96
8	Words	63.5	285	52	76
9	Word Elements	70.4	285	59	83
10	Sentences	50.3	274	33	66
11	Letter Names	84.3	285	80	92

Summary Categories	Number of Outcomes	Percent of Outcomes
80% or greater	7	64
70-79 percent	2	18
60-69 percent	1	9
50-59 percent	1	9
less than 50 percent	0	0

Distar I Reading

The overall proficiency data on the Distar outcomes are given in Table 9. The average proficiency level varies over outcomes from 24.2% (Comprehension) to 87.3% (Writing). However, because of the extremely small and homogeneous sample of classes participating, this finding is highly tenuous and must be interpreted cautiously.

Table 9

Description of Outcome Proficiency for Distar I
Classes on Distar Program Outcomes

Outcome	Mean	N	Q1	Q3
1 Symbol-Action	82.4	25	69	96
2 Blending-Say it Fast	81.7	24	71	94
3 Rhyming	42.5	22	29	57
4 Spelling by Sound	53.6	23	12	85
5 Writing	87.3	22	82	93
6 Sound Recognition	76.4	22	66	88
7 Word Recognition	51.0	22	32	60
8 Word Attack	28.1	23	0	49
9 Reading Stories	56.9	22	46	65
10 Answering Questions	54.1	22	40	70
11 Comprehension	24.2	23	0	38

Summary Categories	Number of Outcomes	Percent of Outcomes
80% or greater	4	36
70-79 percent	0	0
60-69 percent	4	36
50-59 percent	3	27
less than 50 percent	0	0

OUTCOME PROFICIENCY BY PROGRAM USE AND INSTRUCTIONAL EMPHASIS

The data presented on average class outcome proficiency on the four programs are a useful but incomplete basis for viewing instructional accomplishments. While the summaries for each program focused on the overall level of proficiency attained on outcomes, the most interesting feature of these data is the tremendous variability evidenced within each program across classes in the level of outcome proficiency attained. This KRR experience and the experience of earlier efforts (Hanson & Schutz, 1975; 1976) that focused on a single program have shown the importance of within-program-between-class variability as the major attribute of interest in research on programs. Unless the variability in these effects is accounted for, it is impossible to describe adequately the elements of school instruction.

The route chosen to arrive at judgments regarding the creditable accomplishments of a program in KRR is to examine proficiency across various subgroups representing educationally meaningful attributes. The instructional effectiveness of a program is then judged relative to the extent that those effects generalize across these attributes. Although this route has been infrequently, if ever, followed in educational research, it has considerable methodological attractiveness in addition to its particular instrumental value for the present study.

In this report, proficiency data for programs relative to one important educational attribute--instructional use--are given. In future reports, proficiency data relative to various other educationally important attributes will be presented. Viewed in total for a single program, such information provides a picture of the program's robustness. When such analyses are extended to the cross-program proficiencies, the basis for judgment is further expanded. At that point, the information warrants conclusions about the comparative effectiveness of programs, accomplishing the full objectives of KRR of establishing a methodology for this purpose.

Relating amount of instructional program use to outcome proficiency is more complex than it first appears. This is due to the fact that programs are structured differently and provide differential amounts of instruction on outcomes. To take these considerations into account in the presentation of proficiency data, several analytical procedures were employed. The first procedure was to designate four categories of program use for each program. These correspond to the four quartile points in terms of each program's structure. For example, if a program were composed of 20 units, each completion quartile would span five units, 1-5, 6-10, 11-15 and 16-20. This categorization appears reasonable on empirical as well as logical grounds. Adequate numbers of classes fall into each of these completion quartiles in the KRR sample. Such "balance" in the number of classes within each is important if meaningful estimates of outcome proficiency for each category are to be obtained.

The second procedure was to designate the specific completion quartiles that included direct program instruction on each outcome. This was obtained by two means: by reference to the instructional specifications and materials provided with each program by the publishers and by a careful analysis of the actual program materials. Figures 5-8 show for each program the quartiles in which instruction for an outcome was given.

The final procedure was to designate and summarize the results for all outcomes in terms of the pattern of proficiency observed (Tables 10-14). This pattern array takes into account three characteristics of the outcome: lowest proficiency of classes, amount of instruction provided on the outcome across completion quartiles, and the highest proficiency on the outcome across the completion quartiles. Categories used in Tables 10-14 under each characteristic are as follows:

<u>Lowest Proficiency</u>	<u>Instruction Provided</u>	<u>Highest Proficiency</u>
1 less than 40%	1 one quartile or less	1 less than 40%
2 40% to 70%	2 two quartiles	2 40% to 70%
3 71% to 90%	3 three quartiles	3 71% to 90%
4 greater than 90%	4 four quartiles	4 greater than 90%

A numerical pattern is determined for an outcome (Tables 10-14) by selecting the appropriate numbered category under each of the three characteristics. Thus, each pattern is a set of three numbers from 1 to 4. To illustrate, the pattern 213 describes an outcome for which the lowest proficiency was between 40 and 70% (2), there was one quartile or less of instruction provided on the outcome (1), and the highest proficiency was between 71 and 90% (3).

Alpha Time

Figure 5 provides a description of the outcome proficiency attained by classes in each of the four completion quartiles on each program outcome. It also shows, through use of shading, the completion quartiles in which the outcome was taught. These data show that of the 21 Alpha Time outcomes, 17 were found to be taught in two or more of the four program completion quartiles, i.e., two or more completion quartiles are shaded for 17 of the outcomes.

To further summarize Alpha Time results (Table 10), all outcomes were examined in terms of lowest proficiency (lowest proficiency observed across the four completion categories), amount of instruction provided (quartiles "shaded" in Figure 5), and highest proficiency (highest average proficiency of classes in the four quartiles). Table 10 shows that the most frequently occurring outcome patterns are 243 and 343, with four and five entries respectively. These outcomes all show moderate to high levels of lowest proficiency (2) or (3), instruction given

Figure 5. Alpha Time outcome proficiency by completion quartiles and instructional emphasis.

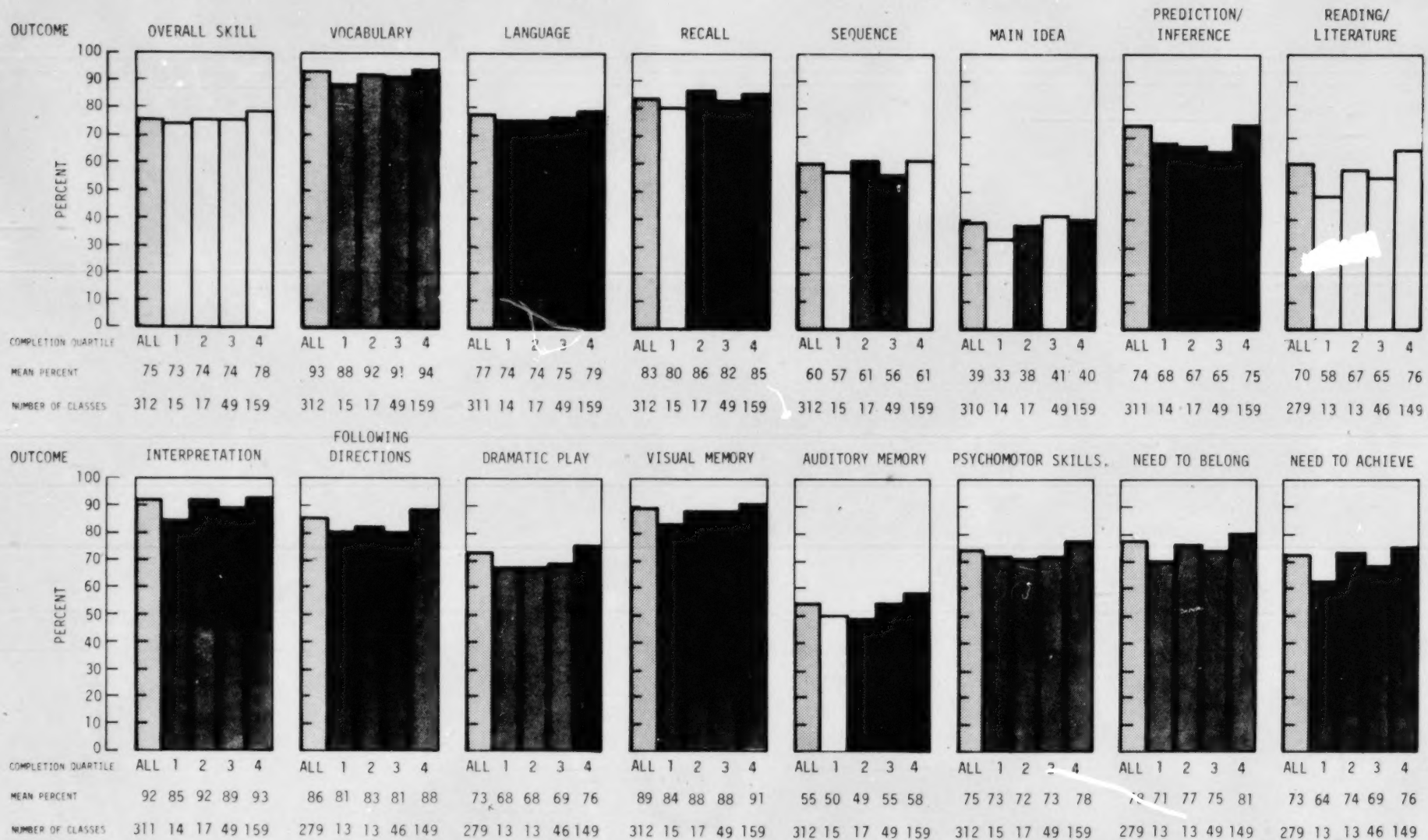
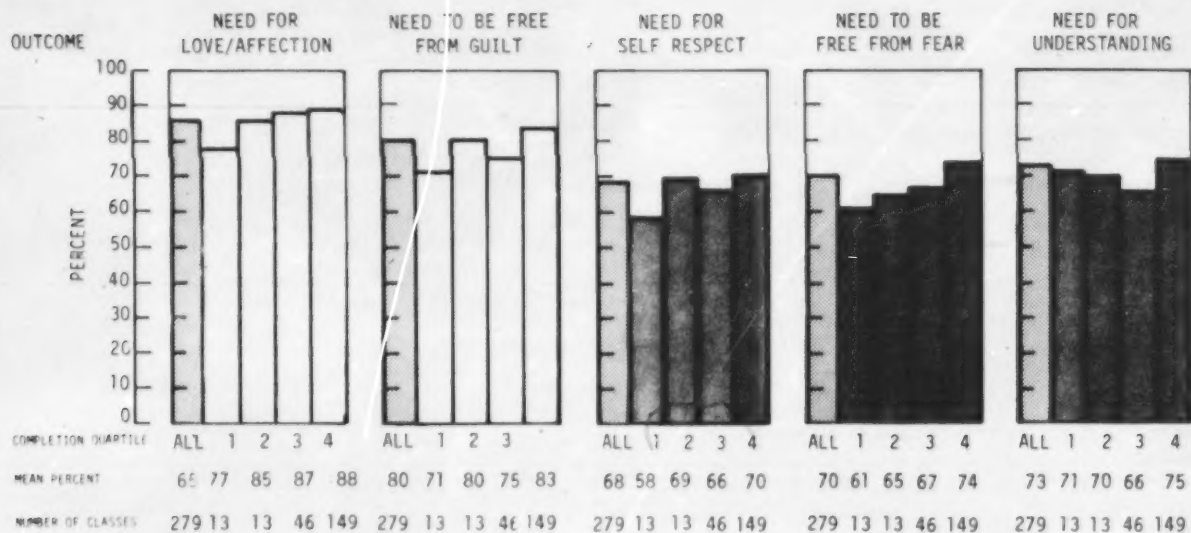


Figure 5--Continued



AVERAGE PROFICIENCY FOR ALL PROGRAM USERS
 INSTRUCTION NOT PROVIDED IN THIS QUARTILE
 INSTRUCTION PROVIDED IN THIS QUARTILE

Table 10

Outcome Patterns for Alpha Time

Outcome Patterns Observed ^a							
Outcome Number	A	B	C	Outcome Number	A	B	C
1	3	1	3	11	2	4	3
2	3	4	4	12	3	4	4
3	3	4	3	13	2	3	2
4	3	3	3	14	3	4	3
5	2	2	2	15	3	4	3
6	1	2	2	16	2	4	3
7	2	4	3	17	3	1	3
8	2	1	3	18	3	1	3
9	3	4	4	19	2	4	2
10	3	4	3	20	2	4	3
				21	2	4	3

Summary of Patterns

Pattern	Number	Pattern	Number
122	1	243	5
213	1	313	3
222	1	333	1
232	1	343	4
242	1	344	3

^aA = Lowest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%

B = Instruction provided: 1. one quartile or less; 2. two quartiles;
3. three quartiles; 4. four quartiles

C = Highest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%

across all four quartiles (4), and high final proficiency (3), i.e., between 70 and 90%. There were two patterns, 313 and 344, which were displayed by three outcomes. The first, 313, shows comparable levels of both lowest and highest proficiency and little instruction. The second, 344, shows high levels of proficiency moving to very high levels with instruction in all four quartiles. All other patterns occurred for only one outcome.

Beginning to Read, Write and Listen

A description of the proficiency increments by completion quartiles for all outcomes of the Beginning to Read, Write, and Listen Program is given in Figure 6. It shows that a wide variety of proficiency patterns are present for the 29 program outcomes.

The outcome patterns for the Beginning to Read, Write and Listen Program are given in Table 11. As these data indicate, a wide variety of patterns were observed. A total of 18 different patterns were found for the 29 outcomes. Of these 18 patterns, only two applied to more than two outcomes.

The most frequently occurring pattern, which applied to five outcomes, was 132. This corresponds to a low proficiency of less than 40% (1), three quartiles of instruction (3) and a moderate proficiency of between 40 and 70% (2). The other pattern that applied to more than two outcomes is 343. It describes outcomes on which instruction was given in all four quartiles but both the low and high proficiencies were in the 70 to 90% range.

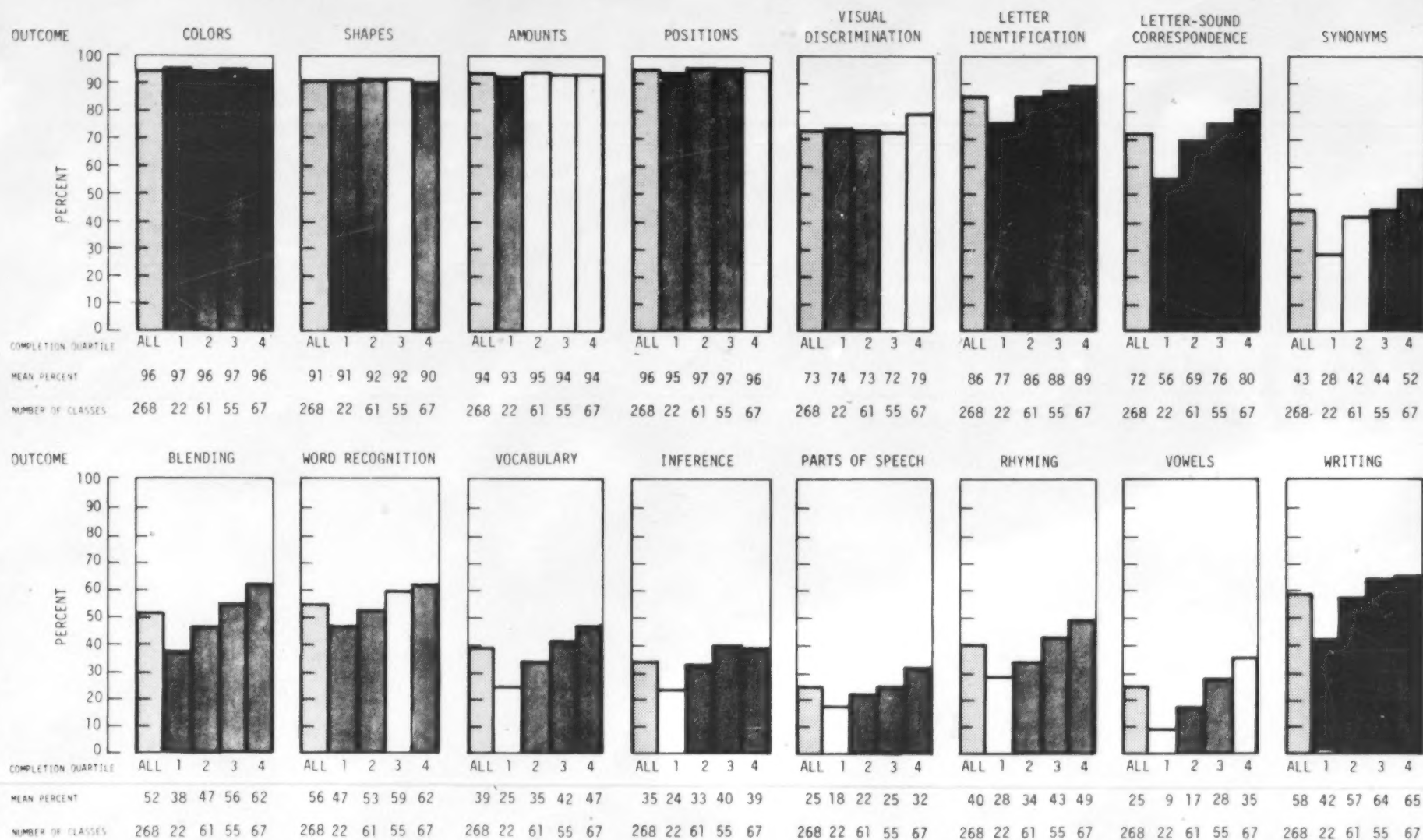
Kindergarten Program

A description of the proficiency changes observed for the Kindergarten Program outcomes is presented in Figure 7. Although the outcomes proficiency data for both the Instructional Concepts and Beginning Reading segments are presented, the completion quartiles are based only on the Beginning Reading Program since it is the segment in use by classes for the full year.

The Kindergarten Program outcome patterns are given in Table 12. They show a total of seven different patterns across the 11 outcomes. The two most frequently occurring are 314 and 414 which together described the patterns for six of the seven ICP outcomes. Both of these patterns show one quartile of instruction and little change in proficiency. This reflects the structure of the quartiles, as mentioned before.

The four reading outcomes show the following patterns: 142, 143, 243 and 343. They all are taught in the full four quartiles, and, with the exception of letter names, show a change in proficiency categories from the low to high estimates.

Figure 6. Beginning to Read, Write, and Listen outcome proficiency by completion quartiles and instructional emphasis.



AVERAGE PROFICIENCY FOR ALL PROGRAM USERS
 INSTRUCTION NOT PROVIDED IN THIS QUARTILE
 INSTRUCTION PROVIDED IN THIS QUARTILE

Figure 6--Continued

38

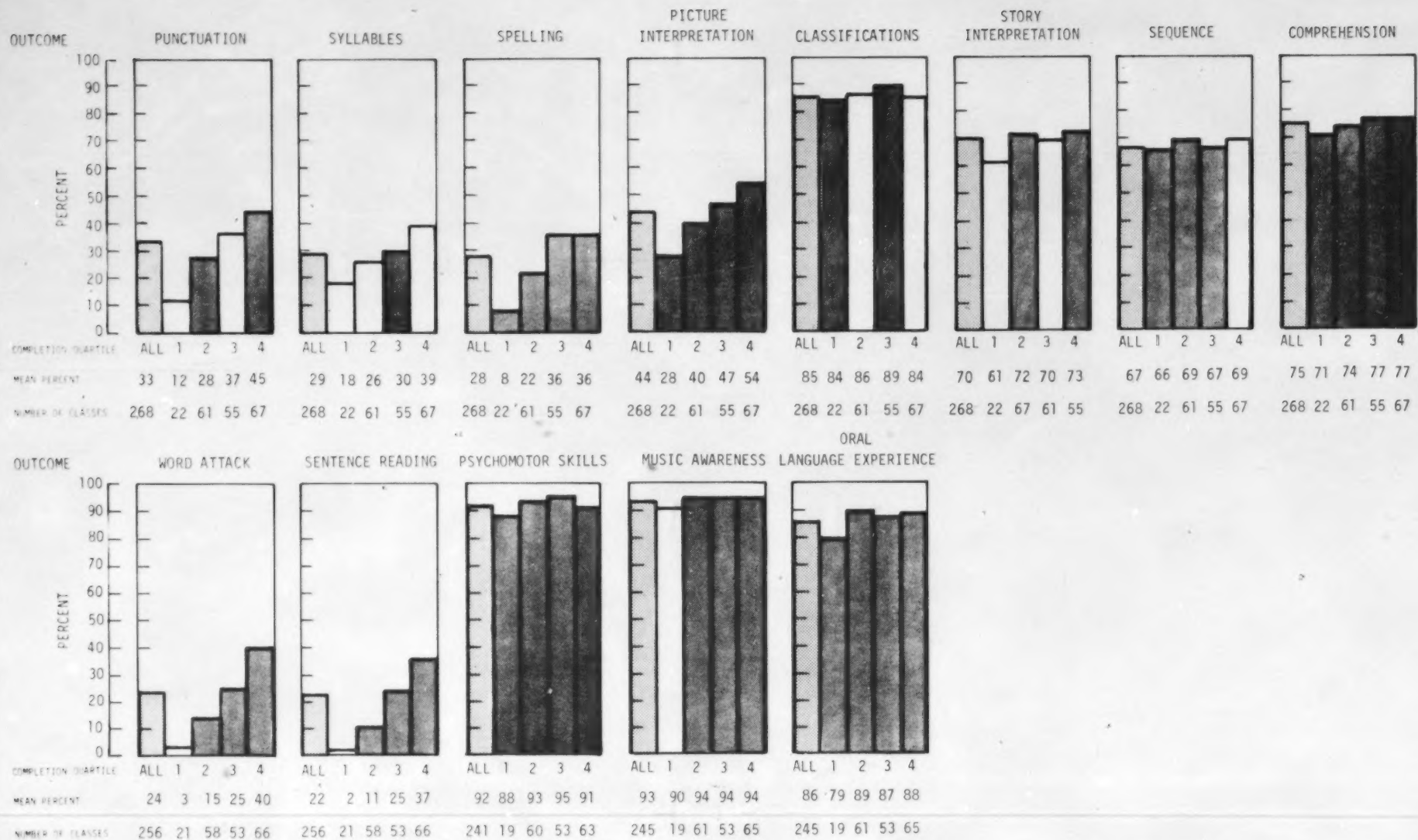


Table 11

Outcome Patterns for Beginning to Read, Write and Listen

Outcome Patterns Observed ^a											
Outcome Number	A	B	C	Outcome Number	A	B	C	Outcome Number	A	B	C
1	4	4	4	11	1	3	2	21	3	2	3
2	3	3	4	12	1	3	2	22	2	2	3
3	4	1	4	13	1	3	1	23	2	3	2
4	4	3	4	14	1	3	2	24	3	4	3
5	3	2	3	15	1	2	1	25	1	3	2
6	3	4	3	16	2	4	2	26	1	3	2
7	2	4	3	17	1	2	2	27	3	4	4
8	1	2	2	18	1	1	1	28	3	3	4
9	1	4	2	19	1	4	1	29	3	4	3
10	2	3	2	20	1	4	2				

Summary of Patterns

Pattern	Number	Pattern	Number
111	1	242	1
121	1	243	1
122	2	323	2
131	1	334	2
132	5	343	3
141	1	344	1
142	2	414	1
223	1	434	1
232	2	444	1

- ^aA = Lowest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%
- B = Instruction provided: 1. one quartile or less; 2. two quartiles;
3. three quartiles; 4. four quartiles
- C = Highest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%

Figure 7. Kindergarten Program outcome proficiency by completion quartiles and instructional emphasis.

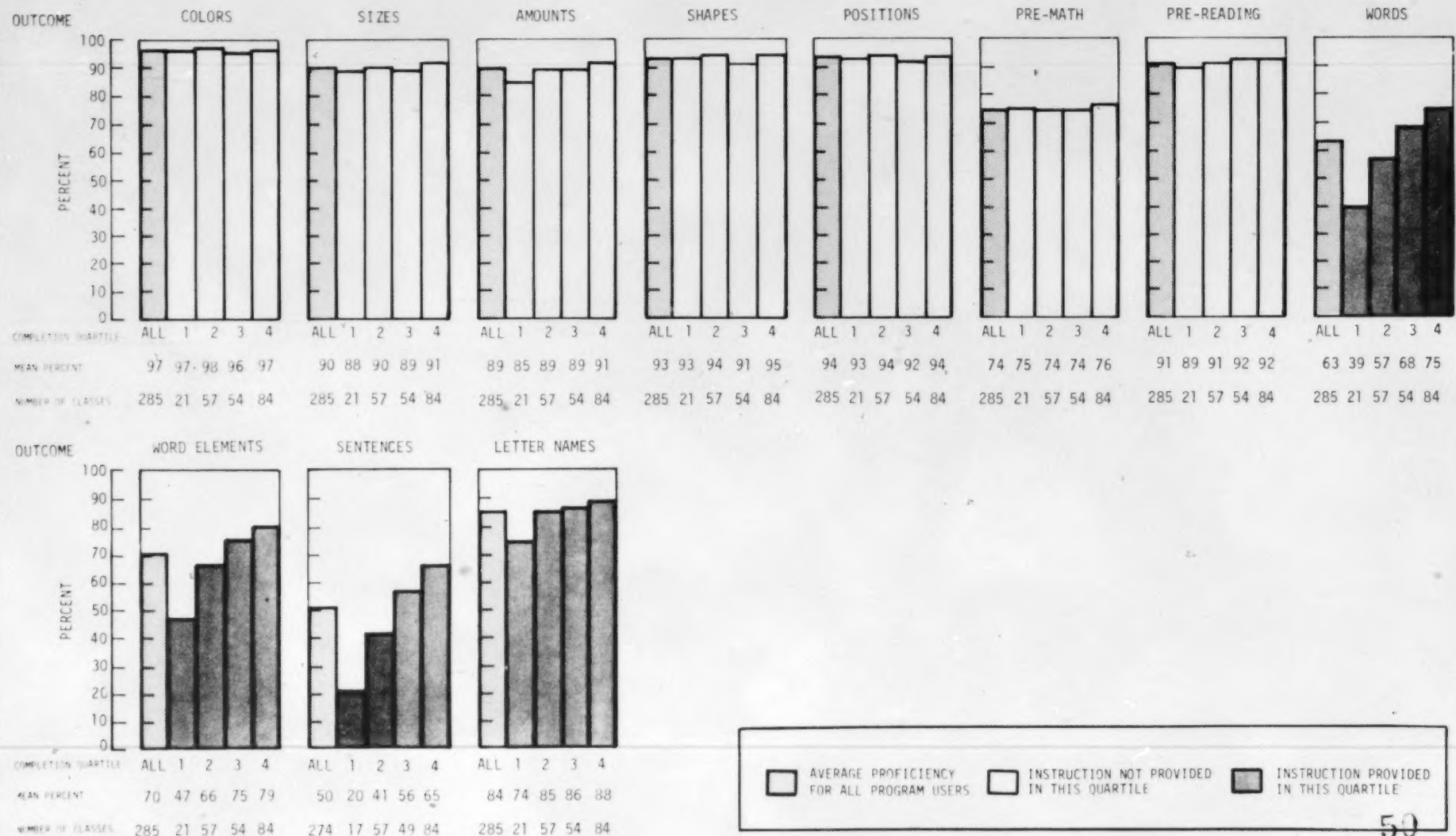


Table 12
Outcome Patterns for Kindergarten Program

Outcome Patterns Observed ^a							
Outcome Number	A	B	C	Outcome Number	A	B	C
1	4	1	4	7	3	1	4
2	3	1	4	8	1	4	3
3	3	1	4	9	2	4	3
4	4	1	4	10	1	4	2
5	4	1	4	11	3	4	3
6	3	1	3				

Summary of Patterns

Pattern	Number
142	1
143	1
243	1
313	1
314	3
343	1
414	3

^aA = Lowest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%

B = Instruction provided: 1. one quartile or less; 2. two quartiles;
3. three quartiles; 4. four quartiles

C = Highest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%

Distar I Reading

The proficiency patterns for the Distar outcomes are given in Figure 8 and summarized in Table 13. They show considerable variability, which may be indicative of the specific and narrowly defined characteristics of the small user sample. Therefore, they will not be interpreted and are not presented as definitive descriptions of expected results for Distar. Rather they further illustrate this aspect of the KRR methodology.

Summary of Outcome Patterns across Patterns

A summary of all the patterns displayed by 61 outcomes of the three programs (excluding those of Distar) is given in Table 14. It shows that several groups of patterns predominated.

One set of patterns includes 122, 132, 142, 143, 223, 243, 334 and 344. Together, they describe 27 outcomes or 44% of the total number. These outcomes all display patterns where gains are shown on outcomes by pupils on which substantial instruction was provided.

A second group of outcome patterns includes 121, 131, 141, 222, 232, 242, 323, 343, 434 and 444. These are all outcomes on which substantial instruction was provided and substantial pupil proficiency gain appeared possible (and to be expected) but none appeared. In all, there were 23 outcomes or over 35% of the total number of outcomes with these patterns. All would appear to be outcomes on which either inadequate or inappropriate instruction was provided.

A third group of outcome patterns are those which showed little instruction provided and little observed change in pupil proficiency. The patterns in this set are 111, 313 and 414. Together, they describe a total of 9 outcomes or about 15% of the total.

Outside of these sets there are only two other patterns corresponding to four outcomes that appear and they are related. One of these is 213 and the other 314. They both represent an outcome on which initial pupil proficiency was moderate to high, little instruction occurred and yet moderate gains were registered. These patterns imply either very effective instruction and/or change in proficiency due to general (common) factors outside the classroom.

Figure 8. Distar I Reading outcome proficiency by completion quartiles and instructional emphasis.

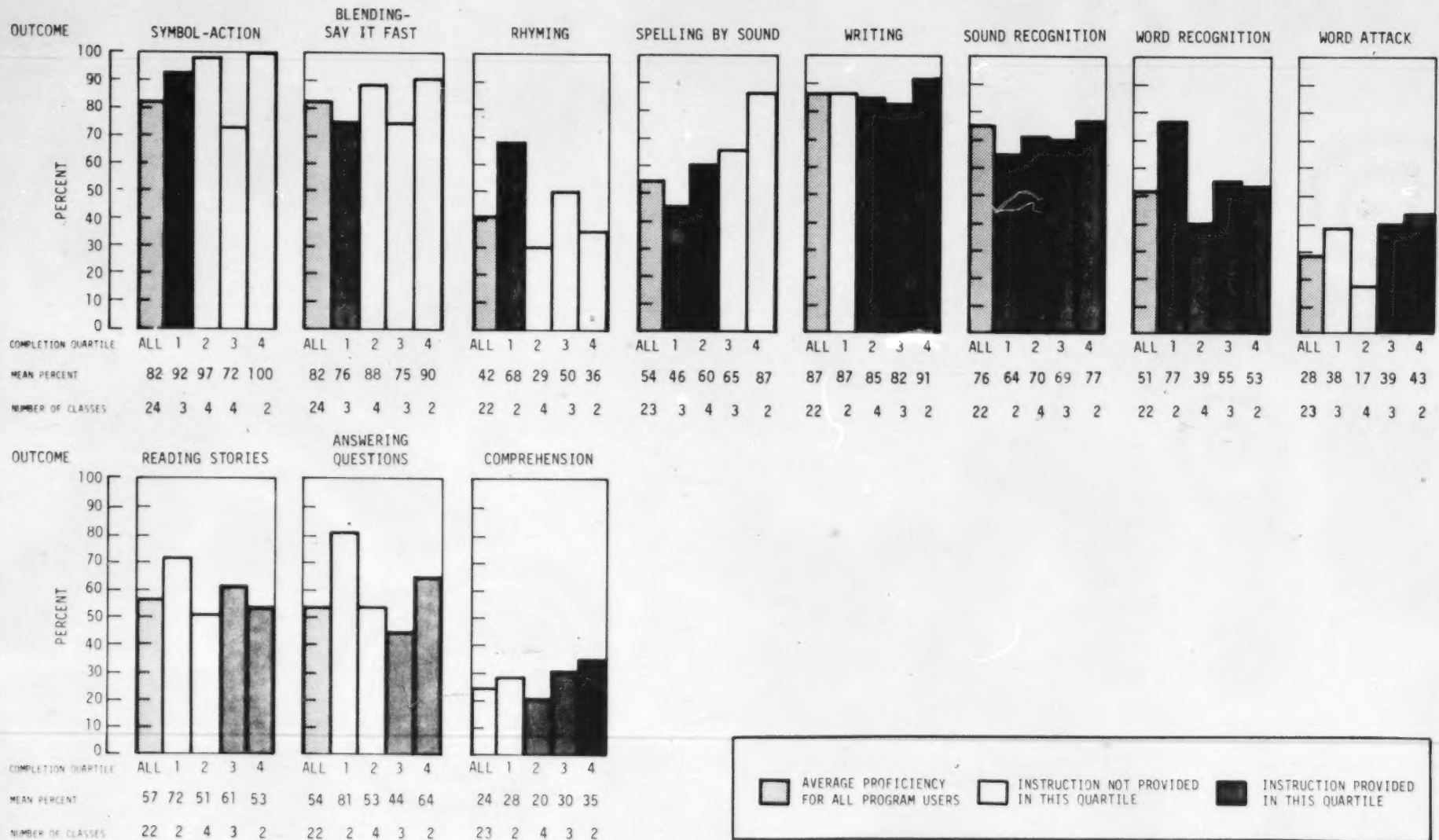


Table 13
Outcome Patterns for Distar I Reading

Outcome Patterns Observed ^a							
Outcome Number	A	B	C	Outcome Number	A	B	C
1	3	1	4	7	1	4	3
2	3	1	3	8	1	2	2
3	1	1	2	9	2	2	3
4	2	2	3	10	2	2	3
5	3	3	4	11	1	3	1
6	2	4	3				

Summary of Patterns

Pattern	Number	Pattern	Number
112	1	243	1
122	1	313	1
131	1	314	1
143	1	334	1
223	3		

- ^aA = Lowest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%
- B = Instruction provided: 1. one quartile or less; 2. two quartiles;
3. three quartiles; 4. four quartiles
- C = Highest proficiency: 1. less than 40%; 2. 40% to 70%; 3. 71% to 90%;
4. greater than 90%

Table 14
Overall Summary of Outcome Proficiency Patterns
for KRR Programs (except Distar)

Pattern	Alpha Time	Beginning to Read, Write and Listen	KP	Total
111	0	1	0	1
121	0	1	0	1
122	1	2	0	3
131	0	1	0	1
132	0	5	0	5
141	0	1	0	1
142	0	2	1	3
143	0	0	1	1
213	1	0	0	1
222	1	0	0	1
223	0	1	0	1
232	1	2	0	3
242	1	1	0	2
243	5	1	1	7
313	3	0	1	4
314	0	0	3	3
323	0	2	0	2
333	1	0	0	1
334	0	2	0	2
343	4	3	1	8
344	3	1	0	4
414	0	1	3	4
434	0	1	0	1
444	0	1	0	1
Total	21	29	11	61

CODA

Viewed from a methodological perspective, this first KRR report has described the procedures and methods of program-fair evaluation. The report suggests by illustration how such information can be used to provide a basis for "fair" comparisons of instructional programs. Reports which exploit this potential more fully are currently being prepared.

Viewed from an educational perspective, the KRR report shows not only that schooling has positive, identifiable effects on youngsters, but also that these effects are sensitive to different instructional programs and to the different ways in which schools use a program. Thus the findings controvert the frequent research assertion that "it doesn't matter what schools do." Schools make a difference for children. The instructional products the schools use make a difference and how the schools use an instructional product makes a difference. Each of these matters a great deal, but educational R&D as an enterprise has been too weak to show how. Shallow and short studies on a fragmentary and disconnected basis are simply inadequate to provide this kind of information. When programmatic R&D adequate to the task is conducted, the information yielded is adequate to the task. "Disadvantaged R&D" rather than "disadvantaged children" better accounts for many of the past problems of education.

The reported findings also show that the difference(s) among educational products can be identified and described without introducing pejorative or stigmatic elements into the discussion. Instructional products differ, just as individual persons and other phenomena differ. None of the programs involved in the present inquiry is "bad." But they do differ. The findings provide indicators of "what you get" with each and as such provide professional substance for the public faith that it is possible to "get what we want from schools."

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Appendix A

ALPHA TIME
(New Dimensions)

1. Overall Letter Skills

Identify letters in isolation and word contexts.

2. Word Analysis - Vocabulary

Identify colors, shapes, positions, sizes, and amounts.

3. Word Analysis - Language

Use appropriate vocabulary to answer questions about a picture or story, select a letter that is the first letter of the name of a pictured object, and name objects in a picture.

4. Simple Recall Skills

Recall simple facts dealing with who, when, where, why, what and how of a teacher read story.

5. Sequence

Identify the correct sequence of ordered events following a teacher read story.

6. Main Idea

Identify the best title of a teacher-read story.

7. Prediction and Inference

Explain a logical inference drawn from a picture, provide logical consequences of an incomplete story, and supply the rhyming word that completes a poem.

8. Reading and Literature

Demonstrate personal pleasure, appreciation, and interest in literature; demonstrate care for books; and use books for specific purposes.

9. Interpretive Skills

Interpret the moods or feelings of characters in story situations.

10. Following Directions

Follow simple directions.

11. Dramatic Play (Skills for Performing and Interpreting Dramatic Play)

Give dramatic expressions to pantomime, and dramatize lines or words so that the audience can identify the mood, emotion, or story being conveyed.

12. Visual Memory

Identify the letter of the alphabet when presented with the letter name or a word beginning with the specified letter.

13. Auditory Memory

Identify letter sounds in simple words.

14. Psychomotor Skills

Write the letters of the alphabet in upper and lower case when presented with an example of the letter or the name of the letter.

15. The Need to Belong

Participate in group activities and interact comfortably with new people.

16. The Need to Achieve

Achieve personal goals and complete assigned tasks independently.

17. The Need for Love and Affection

Accept affection from others.

18. The Need to be Free from Guilt

Recognize that mistakes are to be expected.

19. The Need for Self Respect

Express opinions freely to the teacher or classmates.

20. The Need to be Free from Fear

Share feelings with classmates.

21. The Need for Understanding

Listen attentively.

Appendix B

BEGINNING TO READ, WRITE AND LISTEN
(Lippincott)

1. Colors
Identifying basic colors and those produced by their mixture.
2. Shapes
Identifying the shape of objects.
3. Amounts
Identifying objects that differ in amount.
4. Position
Identifying the position of objects.
5. Visual Discrimination
Distinguishing between familiar objects including letters and words.
6. Alphabet
Identifying upper and lower case letters of the alphabet.
7. Letter-Sounds
Associating appropriate sounds with the letter symbol.
8. Synonyms
Identifying synonyms for words.
9. Blending
Putting together letter sounds to form words.
10. Word Recognition (Memory Words)
Recognizing words introduced in the program that are not blended.
11. Vocabulary
Understanding the meaning of common words.

12. Inference

Completing a phrase or sentence with a logical word.

13. Parts of Speech

Identifying verbs and adjectives.

14. Rhyming

Identifying and forming rhyming words.

15. Vowel-Consonants

Distinguishing vowels and consonants.

16. Writing

Forming the upper and lower case letters, either singularly or in words.

17. Punctuation

Distinguishing punctuation marks.

18. Syllables

Dividing a word into syllables.

19. Spelling

Understanding the meaning of common words.

20. Picture Interpretation

Interpreting the meaning of pictures.

21. Classification

Classifying common objects according to specific dimensions such as sweet-sour.

22. Story Interpretation

Interpreting the meaning of a story.

23. Sequence

Properly ordering a specific set of objects, experiences, etc.

24.. Comprehension

Answering specific questions about a teacher read story.

25. Word Attack

Reading words composed of already learned word elements or letter sounds.

26. Sentence Reading

Reading sentences of already learned words.

27. Manual Dexterity

Demonstrating manual dexterity in simple tasks.

28. Music Awareness

Reacting to musical instruments and to the music made by them.

29. Oral Language Experience

Telling a short story about an experience.

Appendix C
DISTAR I READING
(SRA)

1. Symbol--Action Games

Identify and repeat pictured or teacher presented sequences of bodily movements.

2. Blending--Say it Fast

Say a word at a normal speaking rate when it is presented slowly with pauses between the parts.

3. Rhyming

Make up words that rhyme with a given word by substituting new initial sounds.

4. Blending--Spelling by Sounds

Spell a word by sounds (say one sound at a time), without pausing between the sounds, when the teacher says a word at a normal speaking rate.

5. Writing

Write a symbol, word, phrase, or sentence by tracing the dotted lines when given a printed sample or write one freehand that was previously traced.

6. Sound Recognition

Say the sound represented by a symbol when given a printed symbol.

7. Word Recognition

Read aloud either a word composed of previously taught sounds or a common word that does not have a regular spelling.

8. Word-Attack Skills

Read words that have double consonants; initial or final consonant combinations, or common endings; and read a series of words ending in rhyming patterns.

9. Reading Stories

Read stories of increasing length and complexity both with and without typographical aides.

10. Answering Questions

Make an independent written response when given an oral direction based on skills previously taught.

11. Comprehension

Answer questions from the teacher that demonstrate reading understanding.

Appendix D

KINDERGARTEN PROGRAM
(Ginn and Company)

1. Colors
Select and name examples of the concept, color.
2. Sizes
Select and name examples of the concept, size.
3. Amounts
Select and name examples of the concept, amount.
4. Shapes
Select and name examples of the concept, shape.
5. Positions
Select and name examples of the concept, position.
6. Pre-Math
Select and name examples in the area of pre-mathematics (e.g., equal, different).
7. Pre-Reading
Select and name examples in the area of pre-reading (e.g., first (in time), after (in time), letter, sound).
8. Words
Program words.
9. Word Elements
Identify the sound of program elements.
10. Sentences
Read aloud each word in sentences composed of program words.
11. Letter Names
Identify the letters of the alphabet.